


# Product data sheet

Specifications



## ATV31 4000 W 500V enclosure - 3 ph - IP 55

ATV31CU40N4319

 **Discontinued on:** Jan 5, 2021

 **Discontinued**

### Main

|                                    |  |
|------------------------------------|--|
| Range Of Product                   | Altivar 31   |
| Product Or Component Type          | Variable speed drive   |
| Product Destination                | Asynchronous motors  |
| Product Specific Application       | Simple machine   |
| Assembly Style                     | Enclosed   |
| Component Name                     | ATV31  |
| Emc Filter                         | Integrated   |
| Power Supply Voltage               | 380...500 V - 15...10 %  |
| Power Supply Frequency             | 50...60 Hz - 5...5 %   |
| Network Number Of Phases           | 3 phases   |
| Motor Power Kw                     | 4 kW   |
| Motor Power Hp                     | 5 hp   |
| Line Current                       | 10.6 A 500 V 1 kA<br>13.9 A 380 V 1 kA   |
| Apparent Power                     | 9.2 kVA  |
| Maximum Prospective Line Isc       | 5 kA   |
| Nominal Output Current             | 9.5 A 4 kHz  |
| Maximum Transient Current          | 14.3 A for 60 s  |
| Power Dissipation In W             | 150 W at nominal load  |
| Speed Range                        | 1...50   |
| Transient Overtorque               | 150...170 % of nominal motor torque  |
| Asynchronous Motor Control Profile | Sensorless flux vector control with PWM type motor control signal<br>Factory set : constant torque |
| Analogue Input Number              | 3  |
| Ip Degree Of Protection            | IP55   |

### Complementary

|                               |              |
|-------------------------------|--------------|
| Power Supply Voltage Limit    | 323...550 V  |
| Power Supply Frequency Limits | 47.5...63 Hz |
| Speed Drive Output Frequency  | 0.5...500 Hz |
| Nominal Switching Frequency   | 4 kHz        |

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

|                                     |   |
|-------------------------------------|---|
| Switching Frequency                 | 2...16 kHz adjustable   |
| Braking Torque                      | <= 150 % during 60 s with braking resistor<br>100 % with braking resistor continuously<br>30 % without braking resistor   |
| Regulation Loop                     | Frequency PI regulator  |
| Motor Slip Compensation             | Suppressable<br>Adjustable<br>Automatic whatever the load   |
| Output Voltage                      | <= power supply voltage   |
| Electrical Connection               | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm <sup>2</sup> AWG 14<br>L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 2.5 mm <sup>2</sup> AWG 14  |
| Tightening Torque                   | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6: 0.6 N.m<br>L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-: 0.8 N.m  |
| Insulation                          | Electrical between power and control  |
| Supply                              | Internal supply for logic inputs 19...30 V, <100 mA overload protection<br>Internal supply for logic inputs 19...30 V, <100 mA short-circuit protection<br>Internal supply for reference potentiometer 10...10.8 V, <10 mA overload protection<br>Internal supply for reference potentiometer 10...10.8 V, <10 mA short-circuit protection  |
| Analogue Input Type                 | AI3 configurable current 0...20 mA, impedance: 250 Ohm<br>AI1 configurable voltage 0...10 V, input voltage 30 V max, impedance: 30000 Ohm<br>AI2 configurable voltage +/- 10 V, input voltage 30 V max, impedance: 30000 Ohm  |
| Input Sampling Time                 | LI1...LI6: 4 ms discrete<br>AI1, AI2, AI3: 8 ms analog  |
| Output Response Time                | AOV, AOC 8 ms for analog<br>R1A, R1B, R1C, R2A, R2B 8 ms for discrete   |
| Linearity Error                     | +/- 0.2 % for output  |
| Analogue Output Number              | 2   |
| Analogue Output Type                | AOC configurable current: 0...20 mA, impedance: 800 Ohm, resolution: 8 bits<br>AOV configurable voltage: 0...10 V, impedance: 470 Ohm, resolution: 8 bits   |
| Discrete Input Logic                | Positive logic (source) (LI1...LI6), < 5 V (state 0), > 11 V (state 1)<br>Logic input not wired (LI1...LI4), < 13 V (state 1)<br>Negative logic (source) (LI1...LI6), > 19 V (state 0)  |
| Discrete Output Number              | 2   |
| Discrete Output Type                | Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles<br>Configurable relay logic: (R2A, R2B) NC - 100000 cycles  |
| Minimum Switching Current           | 10 mA 5 V DC R1-R2  |
| Maximum Switching Current           | 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2)<br>2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2)<br>5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2)<br>5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2)  |
| Discrete Input Number               | 6   |
| Discrete Input Type                 | (LI1...LI6) programmable at 24 V, 0...100 mA for PLC, impedance: 3500 Ohm   |
| Acceleration And Deceleration Ramps | Linear adjustable separately from 0.1 to 999.9 s<br>S, U or customized  |
| Braking To Standstill               | By DC injection   |
| Protection Type                     | Input phase breaks: drive<br>Line supply overvoltage and undervoltage safety circuits: drive<br>Line supply phase loss safety function, for three phases supply: drive<br>Motor phase breaks: drive<br>Overcurrent between output phases and earth (on power up only): drive<br>Overheating protection: drive<br>Short-circuit between motor phases: drive<br>Thermal protection: motor |

|                             |  |
|-----------------------------|--|
| Insulation Resistance       | >= 500 mOhm 500 V DC for 1 minute  |
| Local Signalling            | 1 LED (red) for drive voltage<br>Four 7-segment display units for CANopen bus status                               |
| Time Constant               | 5 ms for reference change  |
| Frequency Resolution        | Display unit: 0.1 Hz<br>Analog input: 0.1...100 Hz   |
| Communication Port Protocol | Modbus<br>CANopen  |
| Connector Type              | 1 RJ45 for CANopen via VW3 CANTAP2 adaptor<br>1 RJ45 for Modbus  |
| Physical Interface          | RS485 multidrop serial link for Modbus   |
| Transmission Frame          | RTU for Modbus   |
| Transmission Rate           | 10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen via VW3 CANTAP2 adaptor<br>4800, 9600 or 19200 bps for Modbus |
| Number Of Addresses         | 1...127 for CANopen via VW3 CANTAP2 adaptor<br>1...247 for Modbus  |
| Number Of Drive             | 127 for CANopen via VW3 CANTAP2 adaptor<br>31 for Modbus   |
| Marking                     | CE   |
| Operating Position          | Vertical +/- 10 degree   |
| Net Weight                  | 10.7 kg  |

## Environment

|                                       |   |
|---------------------------------------|---|
| Dielectric Strength                   | 2410 V DC between earth and power terminals<br>3400 V AC between control and power terminals  |
| Electromagnetic Compatibility         | 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 |
| Standards                             | EN 50178  |
| Product Certifications                | CSA<br>N998<br>UL<br>C-Tick   |
| Pollution Degree                      | 2   |
| Protective Treatment                  | TC  |
| Vibration Resistance                  | 1 gn (f= 13...150 Hz) conforming to EN/IEC 60068-2-6<br>1.5 mm (f= 3...13 Hz) conforming to EN/IEC 60068-2-6  |
| Shock Resistance                      | 15 gn for 11 ms conforming to EN/IEC 60068-2-27   |
| Relative Humidity                     | 5...95 % without condensation conforming to IEC 60068-2-3<br>5...95 % without dripping water conforming to IEC 60068-2-3  |
| Ambient Air Temperature For Storage   | -25...70 °C   |
| Ambient Air Temperature For Operation | -10...50 °C without derating (with protective cover on top of the drive)<br>-10...60 °C with derating factor (without protective cover on top of the drive)   |
| Operating Altitude                    | <= 1000 m without derating<br>>= 1000 m with current derating 1 % per 100 m   |

## Packing Units

|                        |     |
|------------------------|-----|
| Unit Type Of Package 1 | PCE |
|------------------------|-----|

|                              |         |
|------------------------------|---------|
| Number Of Units In Package 1 | 1       |
| Package 1 Height             | 42 cm   |
| Package 1 Width              | 31 cm   |
| Package 1 Length             | 28 cm   |
| Package 1 Weight             | 10.7 kg |

## Sustainability




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## Well-being performance

|   |   |     |
|---|---|-----|
|  | Reach Free Of Svhc  |     |
|  | Mercury Free  |     |
|  | Rohs Exemption Information  | Yes |
| Eu Rohs Directive   | Pro-active compliance (Product out of EU RoHS legal scope)<br><a href="#">EU RoHS Declaration</a>   |     |
| China Rohs Regulation   | <a href="#">China RoHS declaration</a>  |     |
| Weee  | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins   |     |
| California Proposition 65   | WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> |     |